necessary information on three-dimensional structures of proteins. It is expected that structural genomics/proteomics will have a major impact on drug discovery. This is reflected by a tremendous commercial interest in structural genomics/proteomics research. Several biotechnology companies like Structural GenomiX and Syrrx have embarked on high-throughput determination of protein structures. In this talk, I will briefly describe the current status and future prospect of structural genomics/proteomics research worldwide as well as in my laboratory. As an example of structural genomics/proteomics study, I will describe a recent work from my laboratory, which has provided insights into the biochemical function of an evolutionarily conserved protein family.

SL104 One gene one product or one gene many products in Caenorhabditis elegans

Hiroaki Kagawa
Okayama University, JAPAN

Entire human genome sequences 3000 Mb have been reported this February. Surprisingly the total gene numbers are 35,000 that are less than we have expected. Total genome sequences (gene numbers) of yeast, the nematode and the fly are 12 Mb (6,000), 97 Mb (19,000) and 120 Mb (13,600) respectively. Gene numbers of animals are not exactly related to the complexity of the gene products. We are studying muscle genes of *Caenorhabditis elegans* and can compare these genes to the fly. The worm has mainly two muscle tissues: pharynx for feeding and body wall muscle for locomotion. Two of each myosin heavy chain gene are expressed in pharynx and body wall of the nematode respectively. In Drosophila one myosin heavy chain gene encodes more than 30 isoforms. In many muscle genes of the worm one gene encodes one isoform. Interestingly one tropomyosin gene encodes two of each pharynx and body wall isoforms. These results means gene number is not essentially to explain the function of the gene products. Comparatively higher number of gene number of the worm means that *C.elegans* contains many basic genes, which are not exactly the same function of mammals.

Results of *C. elegans* researches are not directly of use commercially but have the potential to provide information relevant to vertebrates including humans. Studies of a living animal are much more informative than the biochemical experiments. How medicines or drugs affect multi-cellular organisms in terms of development, growth and life span are useful for designing an experiment on mammals. Single gene functions, metabolic pathways and molecular interactions have already been documented but nowadays many scientists want to know about cross talk between different molecular signals. In that case genetically approaches are much powerful for the purpose. The handling and keeping of the worms are easy and *C. elegant* is a good model for this purpose. Finally I should say that communication, collaboration and archiving are a common sprit in the worm community all over the world.